

400594 400594



Exhibit A. Ghost Image of Aperture Stop Produce by Sunlight (Ghost in Upper Right Corner)

FOOT-165000F

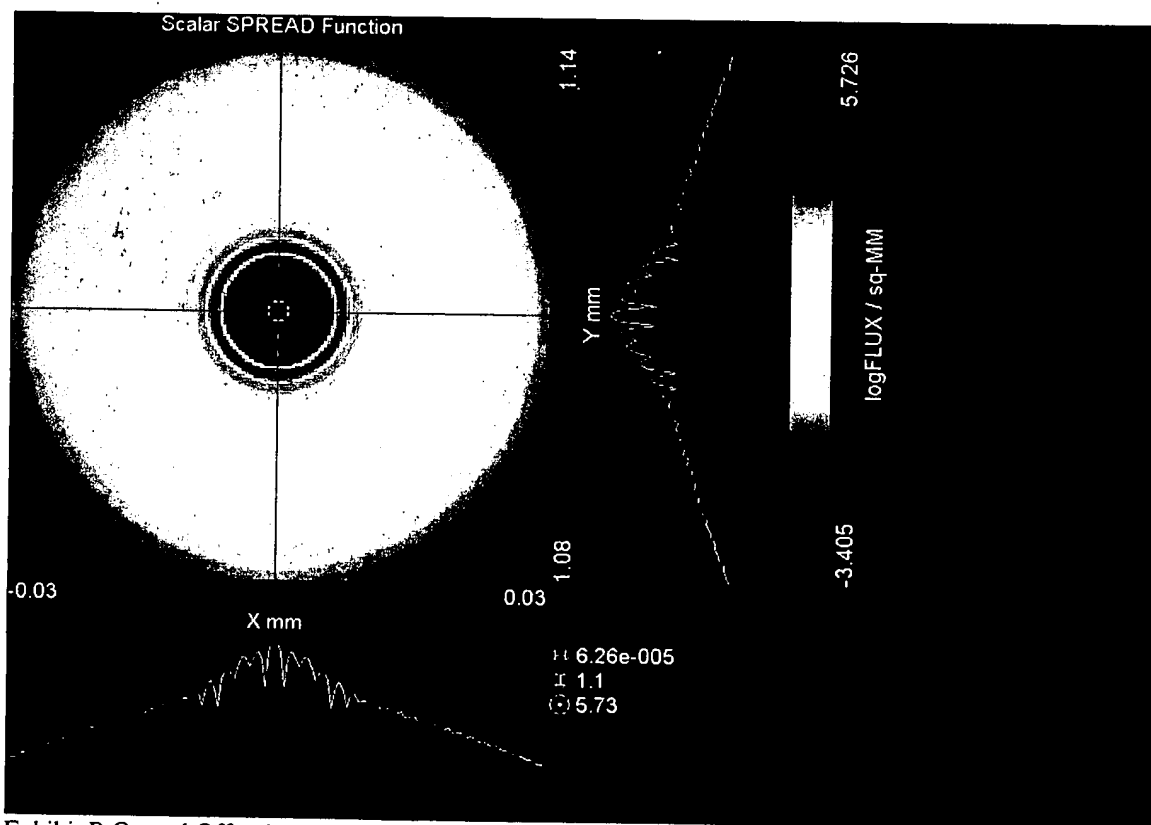
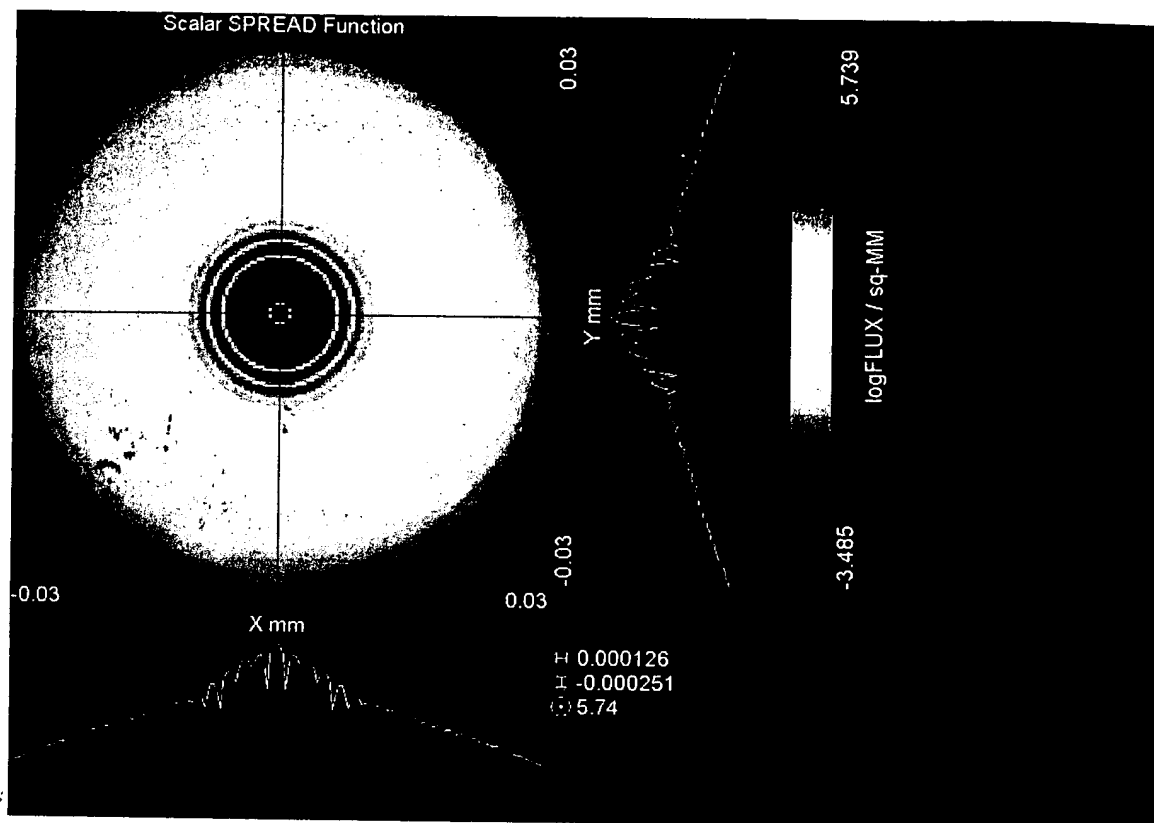


Exhibit B On and Off-axis PSFs

165800T 000000

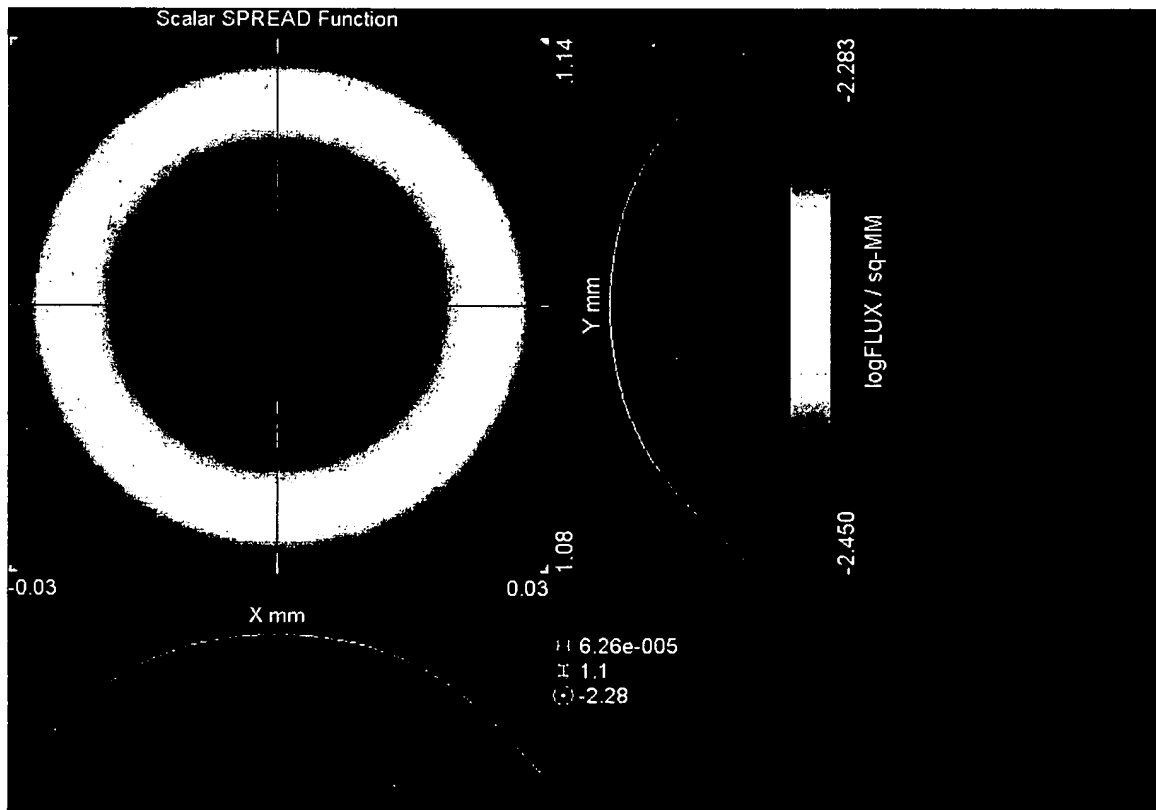
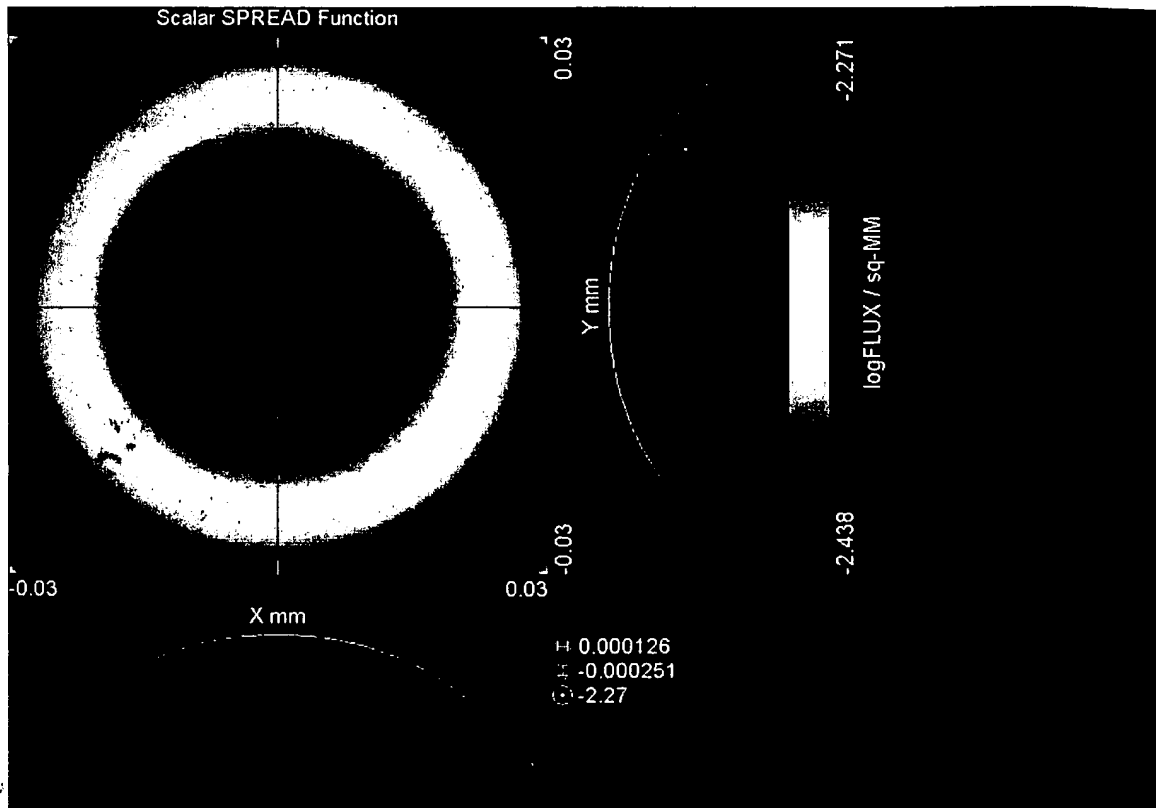


Exhibit C On and Off-axis Ghost Images

T0307F 1656000F

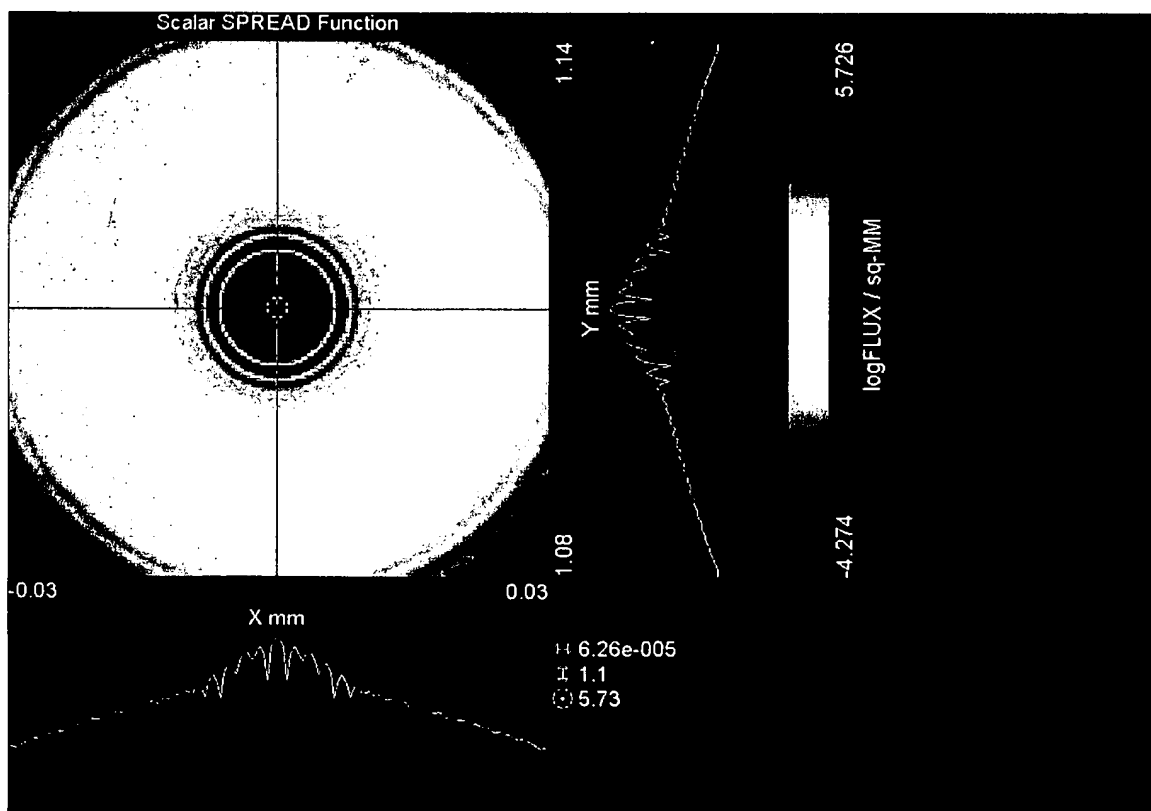
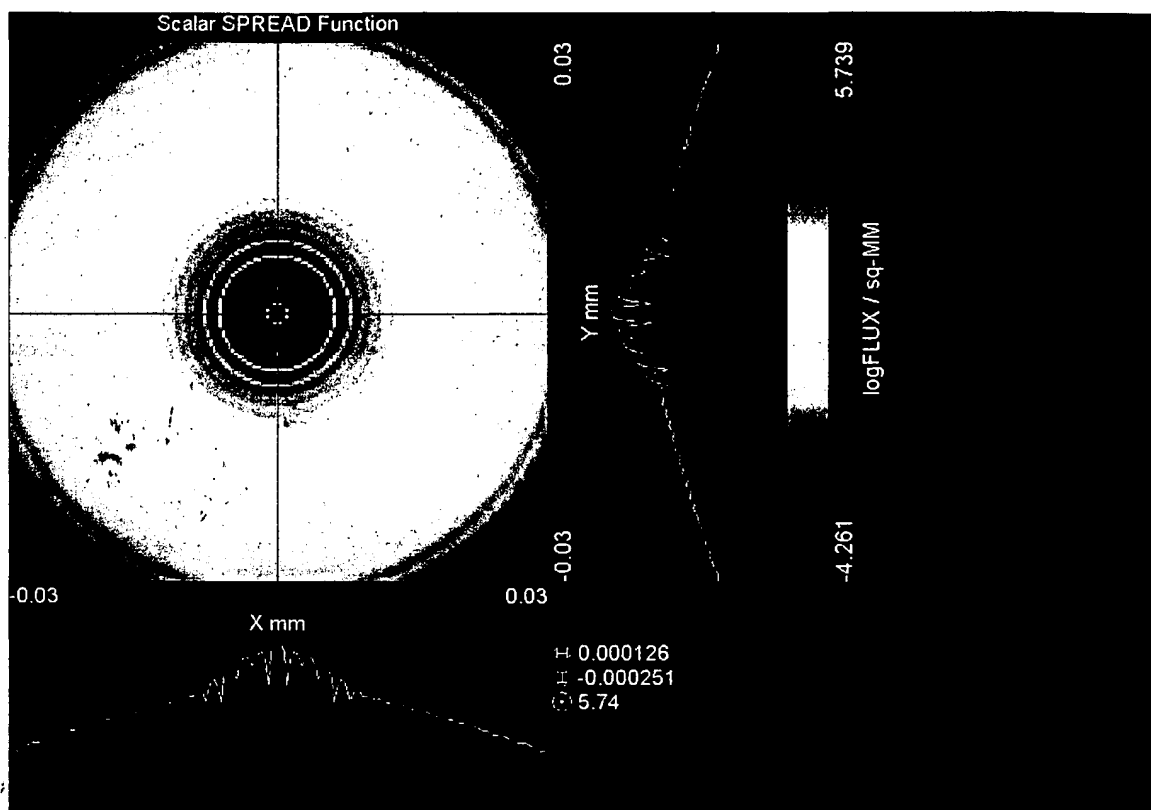


Exhibit D On and Off-axis PSFs with Ghost Contributions

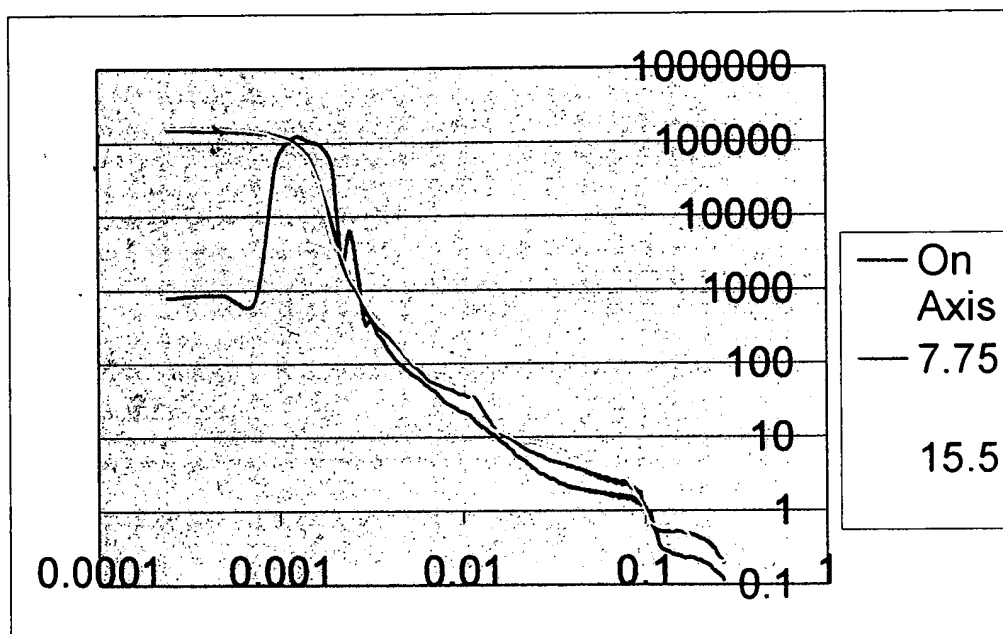


Exhibit E. Measured Data Illustrating the Shift Invariance of Scattered Light and Ghost Images from a Telecentric Optical System (Telecentric in Image Space) of a Digital Camera

TRIPLET SYSTEM TO DEMONSTRATE GHOST IMAGING

51.0665,127.306

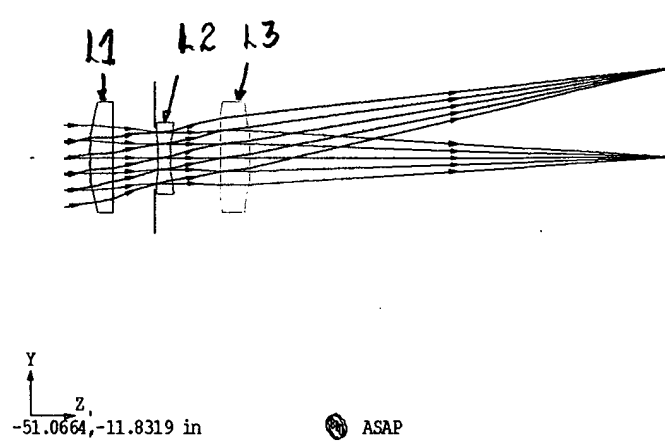


Figure 1 Triplet Lens System with On and Off Axis Point Sources

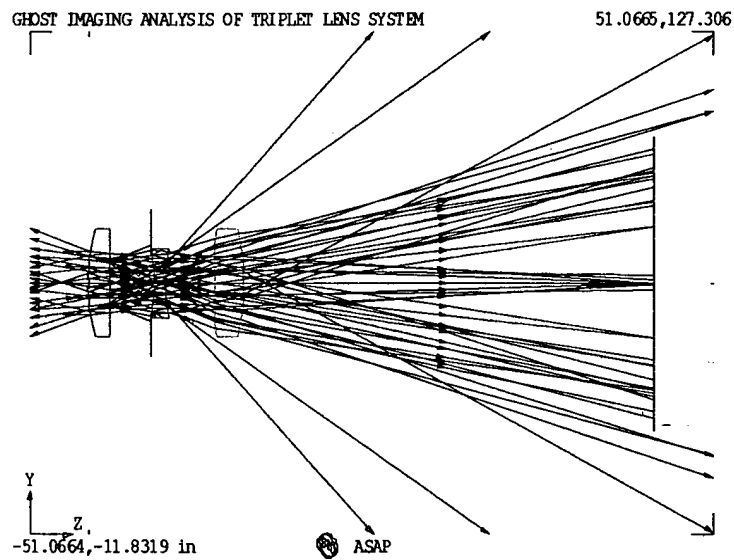


Figure 2 Ghost Reflections through Triplet from On-axis Point Source

GHOST IMAGING ANALYSIS OF TRIPLET LENS SYSTEM

51.0665, 127.306

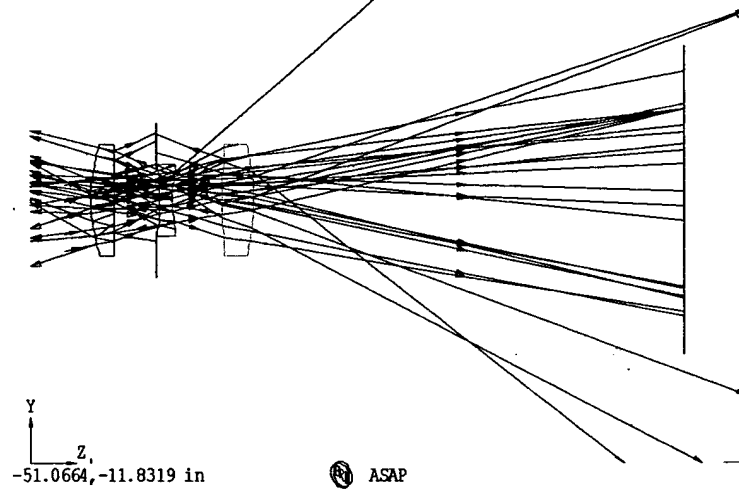


Figure 3 Ghost Reflections through Triplet from Off-axis Point Source

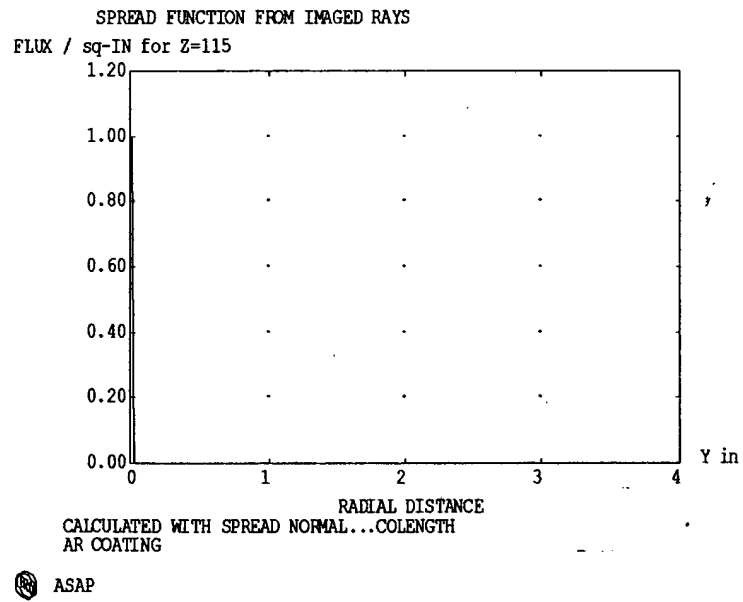


Figure 4 System PSF due to Diffraction and Aberration

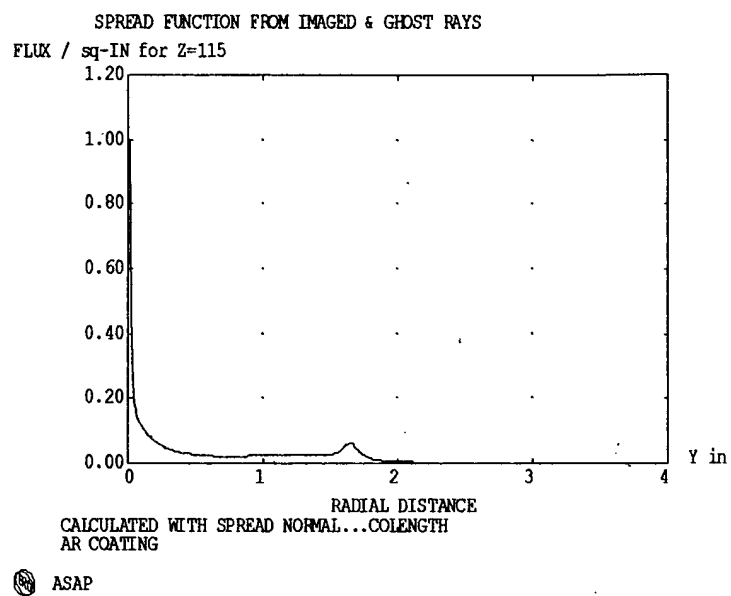


Figure 5 System PSF due to Diffraction, Aberration, and Ghost Images

RAY TRACE FOR PATH 1

51.0665,127.306

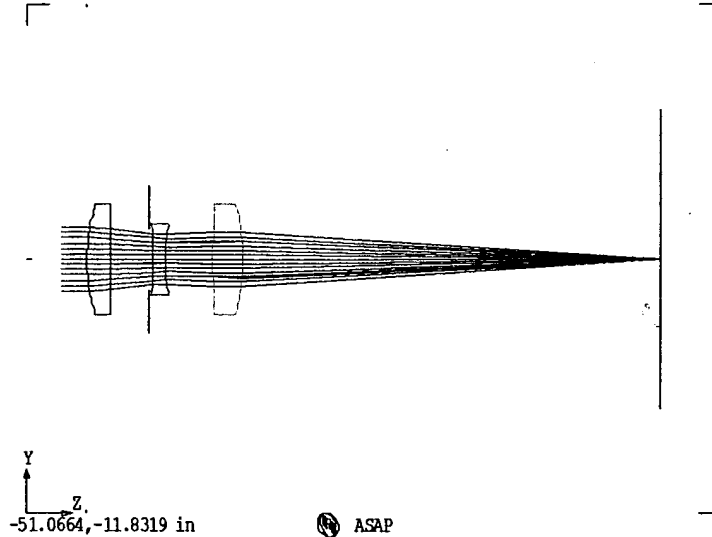


Figure 6 On-Axis Signal Path

RAY TRACE FOR PATH 2

51.0665,127.306

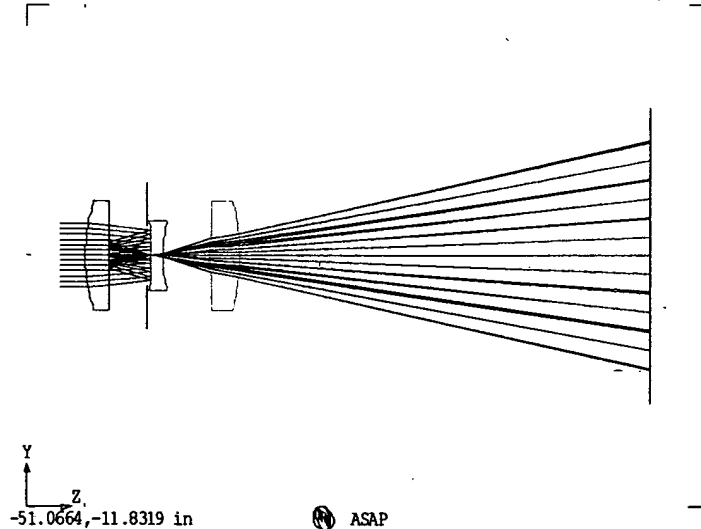


Figure 7 On-Axis Ghost Path of Most Energy

RAY TRACE FOR PATH 1

51.0665,127.306

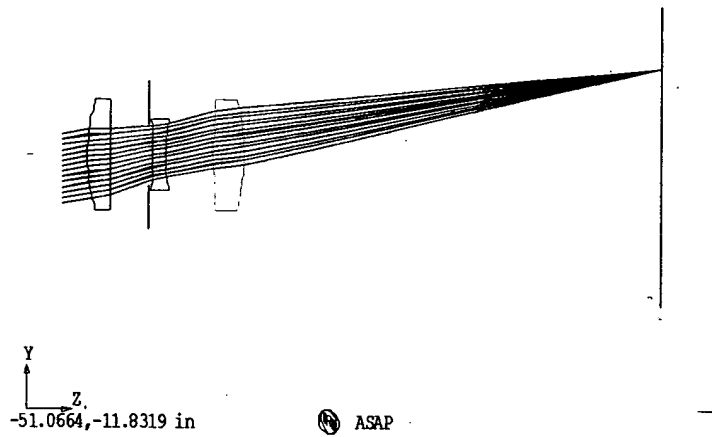


Figure 8 Off-Axis Signal Path

RAY TRACE FOR PATH 3

51.0665,127.306

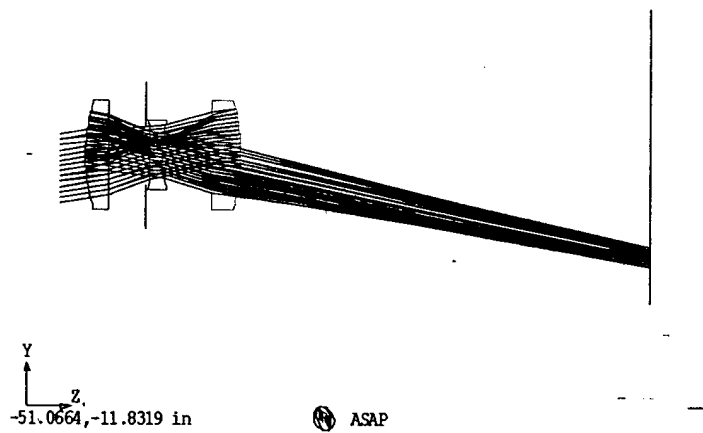


Figure 9 Off-Axis Ghost Path of Most Energy

FOOT " 165000"

IDEAL OPTICAL SYSTEM WITH STOP AT LENS

10.125, 28.5611

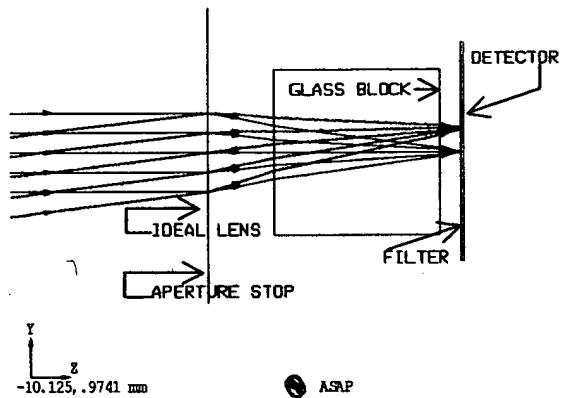


Figure 10 On and Off-axis Point Sources Imaged Through an Ideal Lens with the Stop at the Lens, A glass block, and a Filter

IDEAL OPTICAL SYSTEM WITH STOP AT LENS ILLUSTRATING GHOST IMAGING 10.125, 28.7111

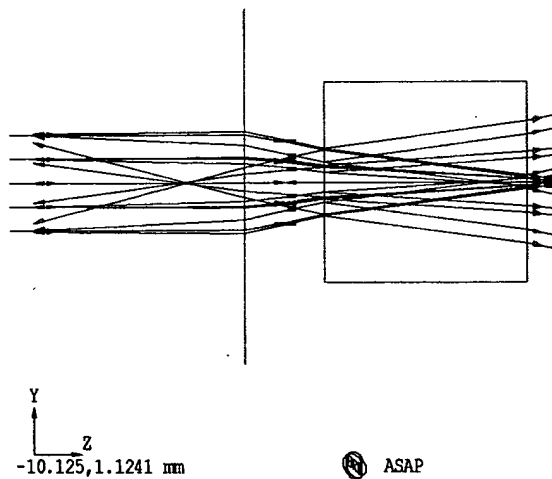
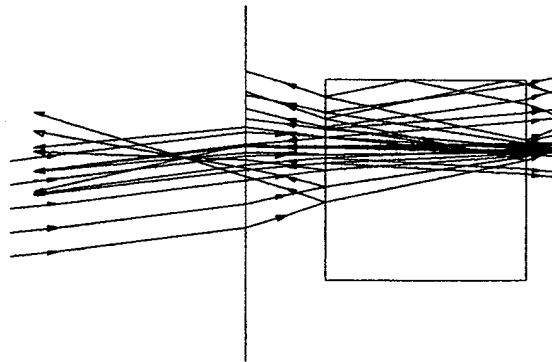


Figure 11 On-axis Ghost Rays

IDEAL OPTICAL SYSTEM WITH STOP AT LENS ILLUSTRATING GHOST IMAGING 10.125, 28.7111



Y
Z
-10.125, 1.1241 mm

ASAP

Figure 12 Off-axis Ghost Rays

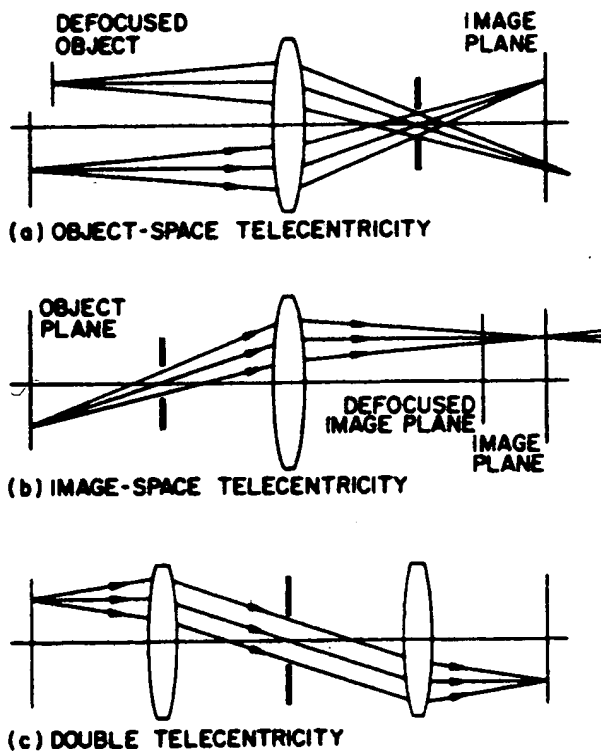


Figure 13 Telecentric Optical Systems

IDEAL TELECENTRIC SYSTEM

11.6265, 26.2566

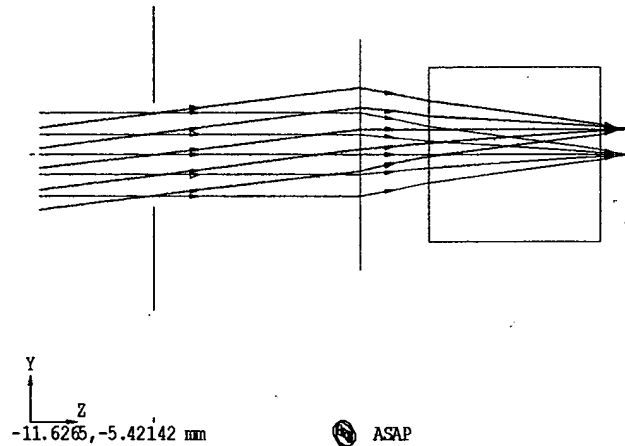


Figure 14 On and Off-axis Point Sources Imaged Through an Ideal Telecentric Lens System with the Stop at the front focal point, A glass block, and a Filter

IDEAL TELECENTRIC SYSTEM ILLUSTRATING GHOST IMAGING

11.6265, 26.2566

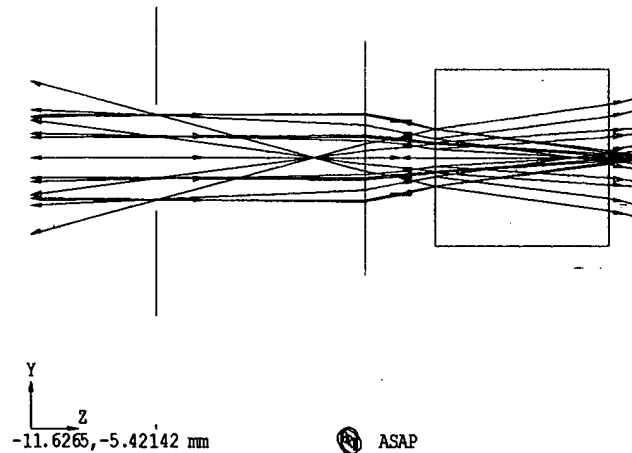


Figure 15 Ghost Image for an On-axis Point Source Through a Telecentric Optical System that is Telecentric in Image Space

TOP SECRET 14-00000

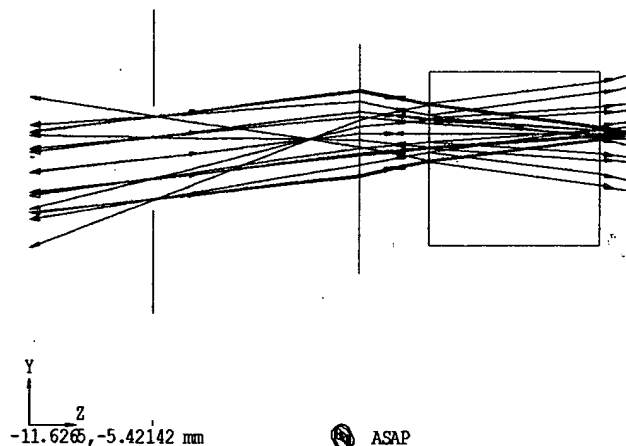
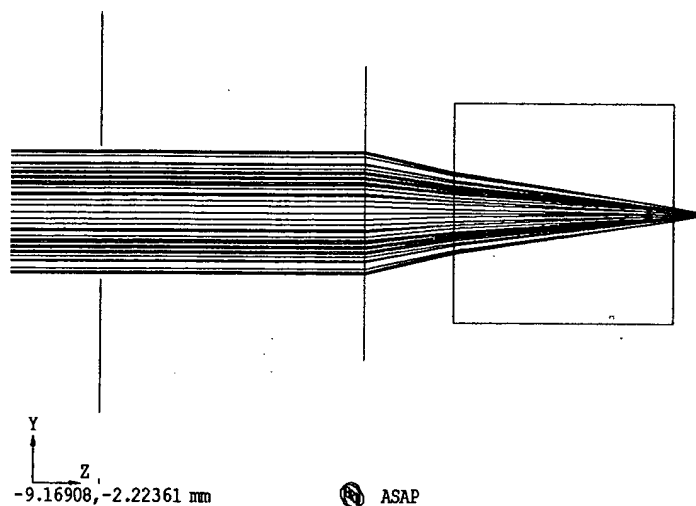


Figure 16 Ghost Image for an Off-axis Point Source Through a Telecentric Optical System that is Telecentric in Image Space

FOOT-165000T

RAY TRACE FOR PATH 1 | 0 DEGREE FIELD ANGLE

9.16908,22.7588



RAY TRACE FOR PATH 1 | 7 DEGREE FIELD ANGLE

9.16908,22.7588

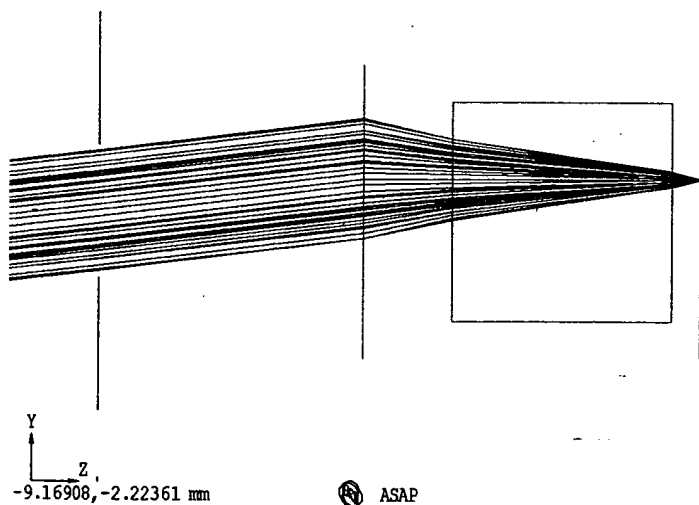
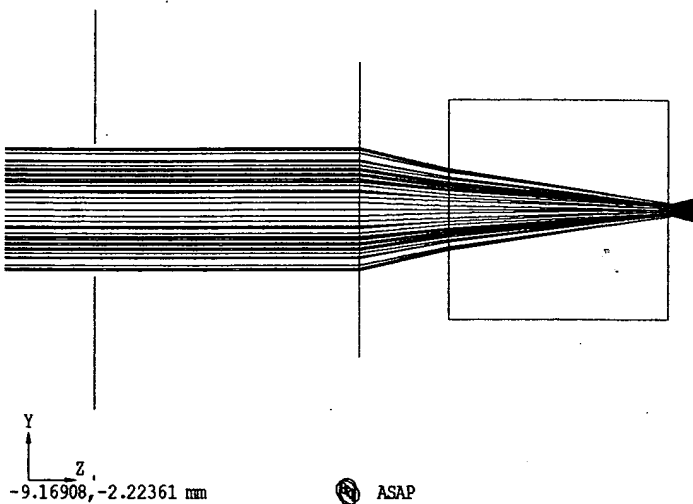


Figure 17 On and Off-axis Signal Paths

FOOT-105000T

RAY TRACE FOR PATH 3 | 0 DEGREE FIELD ANGLE

9.16908,22.7588



RAY TRACE FOR PATH 3 | 7 DEGREE FIELD ANGLE

9.16908,22.7588

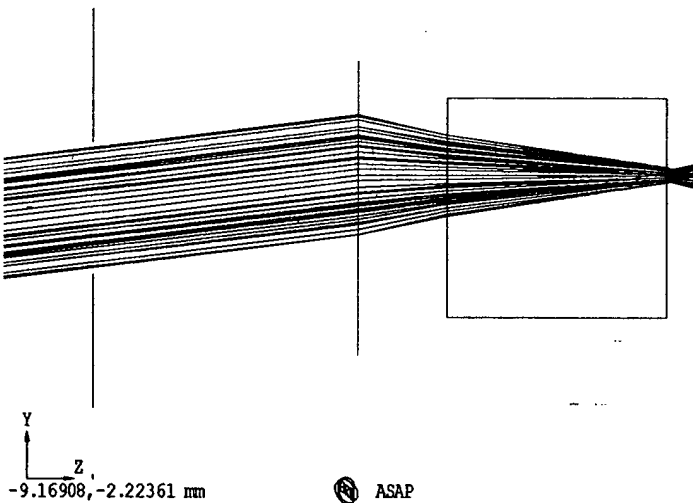
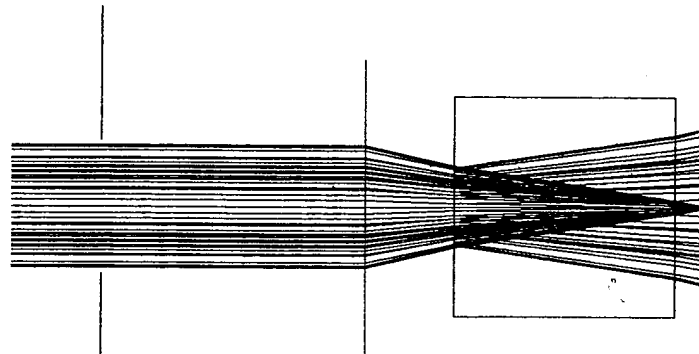


Figure 18 On and Off-axis Most Energetic Ghost Paths

TOP SECRET 16580001

RAY TRACE FOR PATH 4 | 0 DEGREE FIELD ANGLE

9.16908, 22.7588

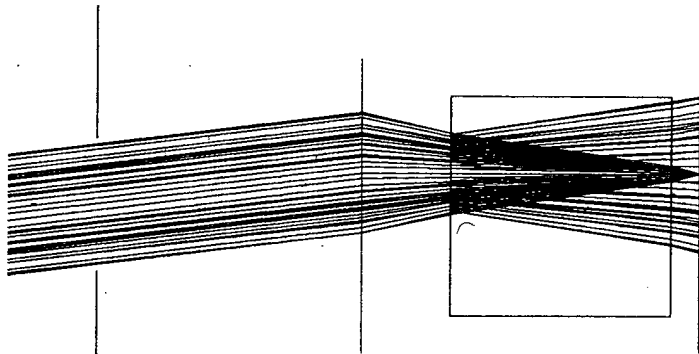


Y
Z
-9.16908, -2.22361 mm

ASAP

RAY TRACE FOR PATH 4 | 7 DEGREE FIELD ANGLE

9.16908, 22.7588



Y
Z
-9.16908, -2.22361 mm

ASAP

Figure 19 On and Off-axis Second Most Energetic Ghost Paths

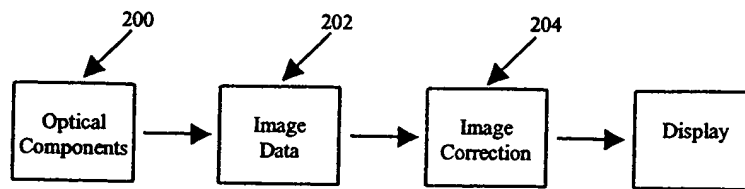


Figure 20

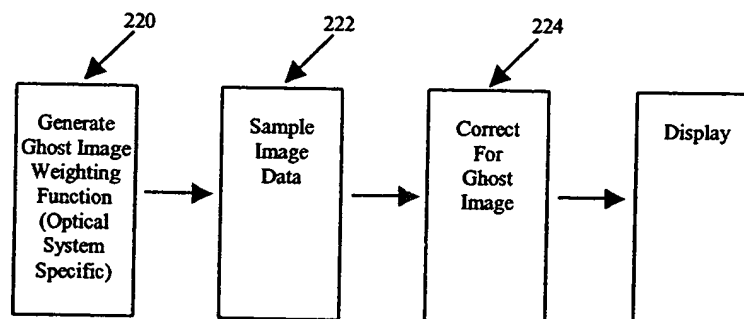


Figure 21